



Turreted Gun System (TGS)

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Outline



- Background
- TGS Description
- ARDEC's Support
 - Ammo Program
 - Barrel Program
- Schedule
- Summary

Evolution of Army Attack Helicopters

1970's



- AH-1 Cobra
- 20mm M197
- M50 Series
- Air-to-Ground Suppression

1980's



- AH-64 Apache
- 30mm M230
- M789 Series
- Air-to-Ground Suppression
- Anti-Armor

2000's



- RAH-66 Comanche
- 20mm XM301
- PGU-28 Series, XM1031, M50 Series, M220, M246, M940, MK149
- Air-to-Air & Air-to-ground
- Scout/Reconnaissance

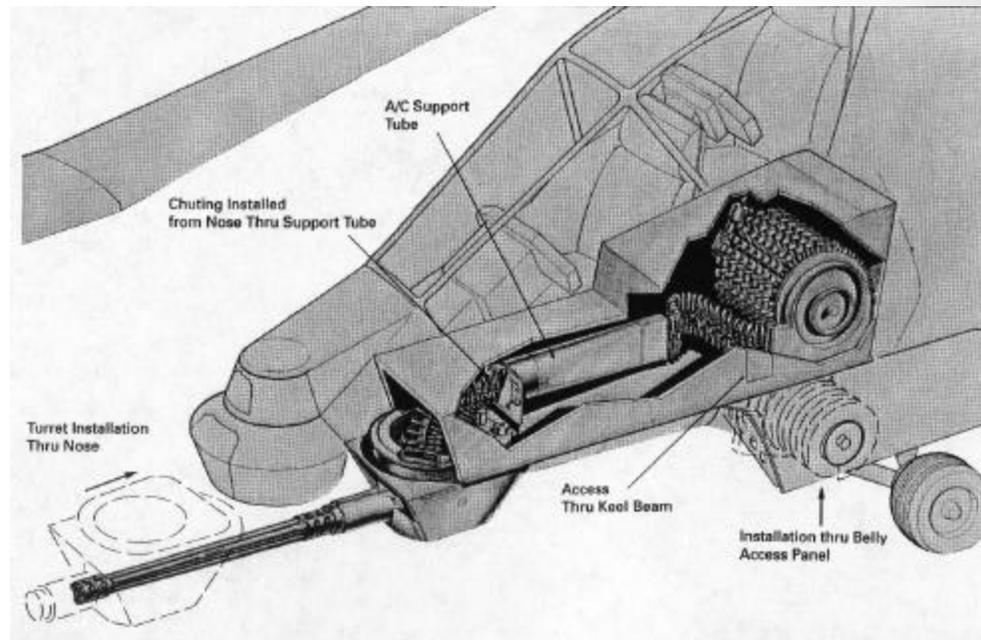


Comanche TGS



Boeing/Sikorsky Team

- 20mm 3 Barrel Lightweight Gatling Gun
- 1500 spm
- Percussion & Electric Gun System (PEGS)



- Ammunition Storage Drum
- 500 rounds linked Ammo Capacity

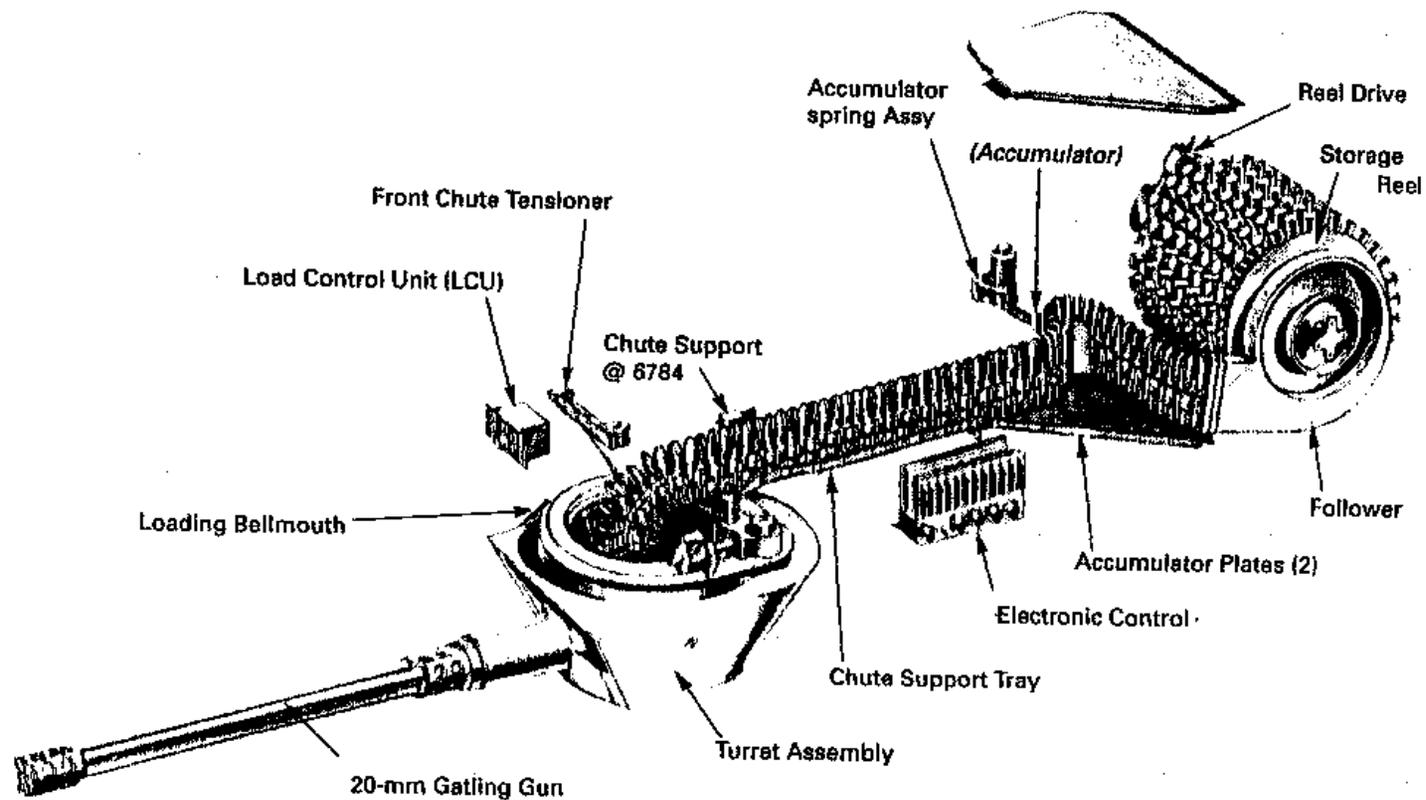
- $\pm 120^\circ$ Azimuth
- $+15^\circ, -45^\circ$ Elevation
($+8^\circ$ El. Between $\pm 20^\circ$ Az.)



TGS Major Components



General Dynamics Armament Systems





XM301 Specs



Weight: 70 lb. (Gun Only)
77 lb. (with Feeder/Delinker)
90 lb. (with Gun & Feeder
Drive Assemblies)

Length: 72 in.

- Interoperable with M50s, PGU-27/28/30, M220, M246, M940, MK149
- 2.2 mil Dispersion
- 1800 lb. Peak recoil Force
- 2.7 in. Max Recoil Travel
- 320 Rounds Fireout Capability



TGS Testing



- 2,000 Rds Hardstand DT&E in 1995
- 10,000 Rds Hardstand DT&E in 1996



- 8,500 Rds Risk Reduction
 - 3 Barrel Sets
 - Muzzle & Mid-Barrel Clamps
 - PoP Turret Integration



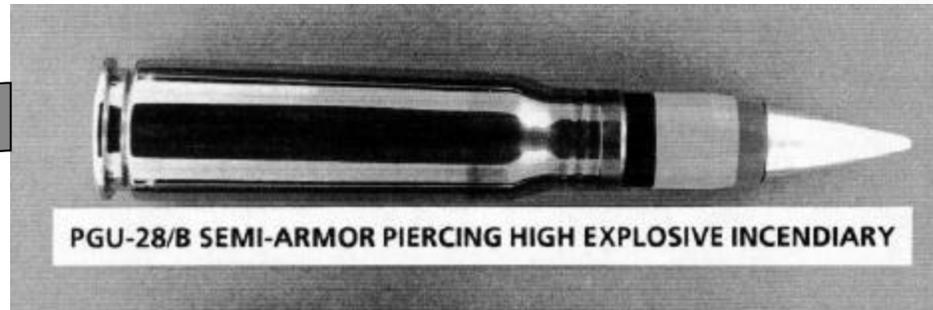
Barrel Life Improvement

- 500 Rds Fireout Capability
- Minimal Weight Increase
- Modeling & Analysis
 - Thermal Stress
 - Wear & Erosion Characterization
 - Advanced Coating & Liner Materials
 - Barrel Geometry
 - Metallurgical Analysis
- Prototype Testing
 - Surrogate Gun (M197, M61)





20mm Ammo Development

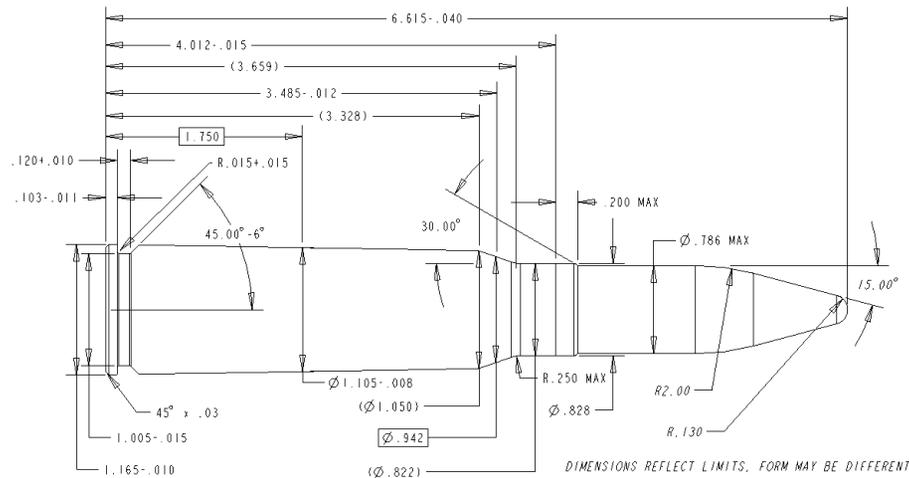


XM1031 Lightweight Multipurpose – Percussion (LMP-P)

- Same Profile
- A/B Warhead with Safe and Arm
- Lightweight Case
- Percussion Primer
- Improved Sealant

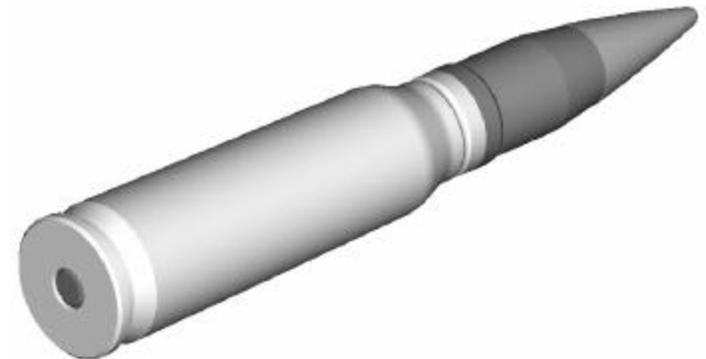


XM1031 Requirements

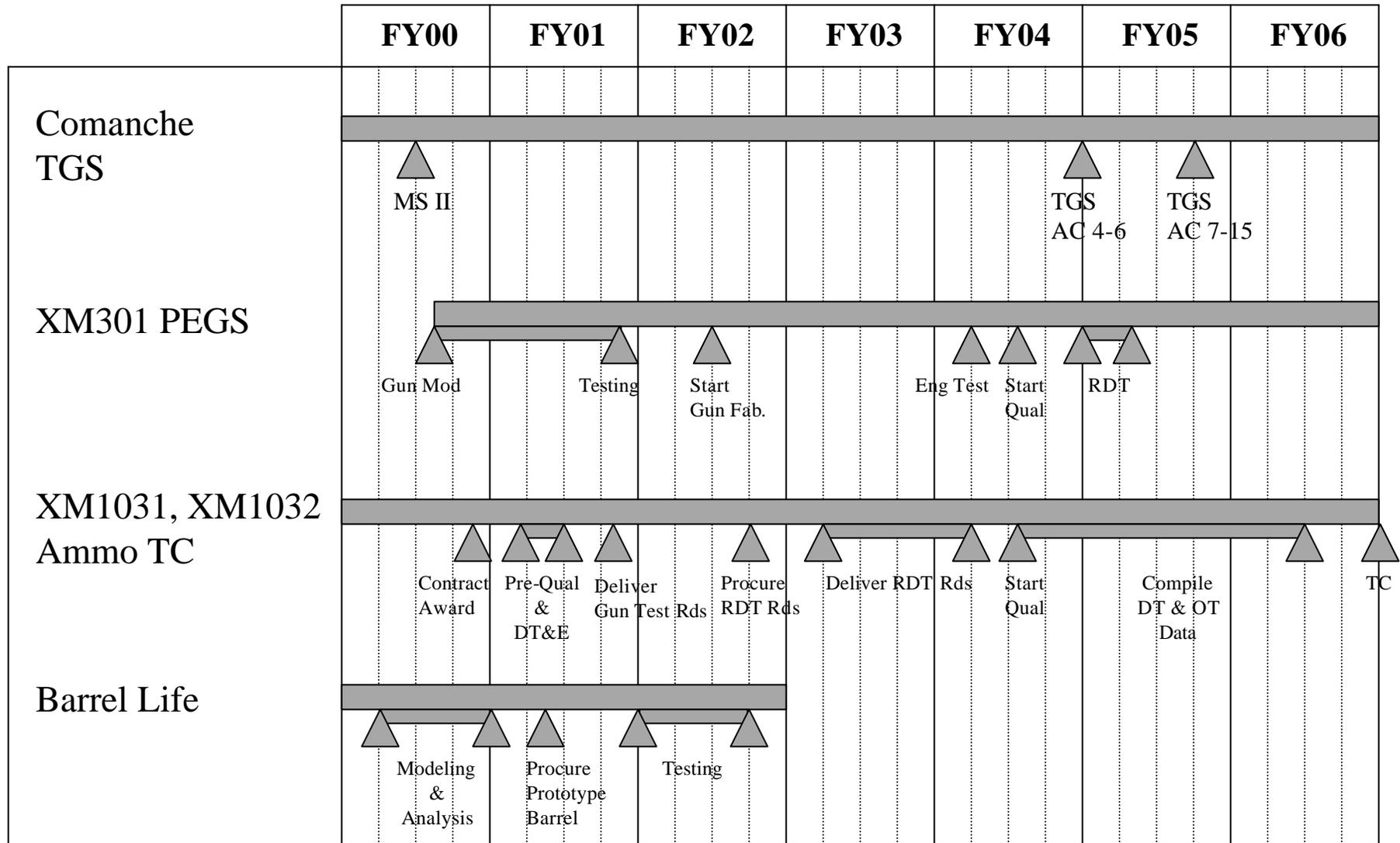


- Lightweight Case
 - 41 Grams
- Percussion primer
 - M36 Performance

- Chamber Pressure: $\bar{x} + 3\sigma < 66,000$ psi
- Velocity @ 75': 3410 fps \pm 45
- Dispersion (1 σ): 0.69 mil (0.42 mil desired)
- Multipurpose Concept
- M14A2 Links
- M548 Container



Comanche TGS Support Schedule





Industry Opportunities

- XM1031, XM1032 Development
 - May RFP Issue
 - Leverage Existing Technologies
 - Leverage Existing Test Data
- Advanced Barrel Configuration
 - Prototype Fabrication and Testing in FY01



SUMMARY



- Comanche Development Program
 - Successful MS II in March
 - 1,213 Comanches over Next 20 Years
- Turreted Gun System
 - 20mm PEGS
 - 500 Rd Drum Storage
 - Composite Turret
- Lightweight 20mm Ammo Contract Award in September